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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,489	11/02/2001	Ronald Pasqualini	NSC1P218/P05063	3363

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EXAMINER

CAO, PHAT X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,489

Applicant(s)

PASQUALINI, RONALD

Examiner

Phat X. Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-5 and 7-10 is/are allowed.
- 6) ☒ Claim(s) 1,6 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The cancellation of claim 11 in Paper No. 8 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Shin et al (US. 5,854,511).

Shin (Fig. 6) discloses an integrated circuit package with a lead frame 3 and a metal slug 2, the metal slug 2 comprising: an upper surface upon which a semiconductor die 1 is mounted and to which ground pads on the semiconductor die 1 are electrically coupled by using wires 4a (column 1, lines 40-50); and a lower surface extending at least until it is exposed and co-planar with an exterior surface of the integrated circuit package, wherein the metal slug 2 is not formed from the lead frame 3, and wherein the metal slug 2 extends underneath the lead frame 3, and is attached thereto.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al (US. 5,854,511) in view of Yamaguchi (US. 6,166,430) (previous cited).

As discussed in detail above, Shin's Fig. 6 substantially reads on claim 1, including the feature of having the lower surface of the metal slug 2 extending past the bottom lead surfaces 3.

Shin does not disclose the lower surface of the metal slug 2 extending a predefined distance outside the semiconductor package.

However, Yamaguchi (Fig. 8) teaches a semiconductor package having a lower surface of the metal slug 24 extending a predefined distance outside the semiconductor package for transmitting heat from the semiconductor chip 23 to the outside of the package (column 14, lines 30-31). Accordingly, it would have been obvious to have the lower surface of the metal slug 2 of Shin either extending or not extending beyond the surface of the package because both structures would provide the same result of transmitting heat from the semiconductor chip to the outside of the package.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US. 6,437,427) in view of Yamaguchi (US. 6,166,430).

Choi (Fig. 2) discloses a semiconductor package comprising: a metal slug 2 having upper and lower surfaces; an integrated circuit die 5 mounted on the metal slug 2, the integrated circuit die 5 having signal pads and ground pads; a lead frame having a plurality of leads 3, the plurality of leads 3 having bottom lead surfaces; and a semiconductor package body 6, wherein signal pads on the integrated circuit die 5 are coupled to leads 3 on the lead frame, ground pads on the integrated circuit 5 are

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coupled to the upper surface of the metal slug 2 and the lower surface of the metal slug 2 remains exposed and co-planar with an exterior surface of the package, the lower surface also extending past the bottom lead surfaces 3.

Choi does not disclose the lower surface of the metal slug 2 extending a predefined distance outside the semiconductor package.

However, Yamaguchi (Fig. 8) teaches a semiconductor package having a lower surface of the metal slug 24 extending a predefined distance outside the semiconductor package for transmitting heat from the semiconductor chip 23 to the outside of the package (column 14, lines 30-31). Accordingly, it would have been obvious to have the lower surface of the metal slug 2 of Choi either extending or not extending beyond the surface of the package because both structures would provide the same result of transmitting heat from the semiconductor chip to the outside of the package.

Allowable Subject Matter

7. Claims 2-5 and 7-10 are allowed.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 6, and 12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (703) 308-4917. The examiner can normally be reached on Monday - Thursday.

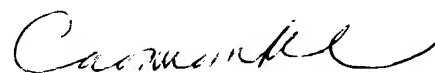
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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PC

August 8, 2003



CHRISTOPHER A. CAL
PRIMARY EXAMINER